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U. S. DEPARTMENT OF AGRICULTURE - FOREST SERVICE
CALIFORNIA FOREST AND RANGE EXPERIMENT STATION
Division of Forest Insect Research

FOREST INSECT CONDITIONS
CALAVERAS BIG TREES STATE PARK
MAY 1954
RECONNAISSANCE SURVEY

A reconnaissance of forest insect activity in Calaveras Big Trees State Park and in the area being added to the Park, in connection with the State's acquisition of South Calaveras Grove, was made on May 20 and 21. The party making the survey consisted of F. A. Meyer, Forest Technician, Division of Beaches and Parks; J. P. Trynor, Chief Ranger at Calaveras; and G. R. Struble and C. B. Eaton, Entomologists, California Forest and Range Experiment Station. The purpose of this examination was to determine the status of bark beetles, found last fall to be attacking, and in some cases killing, a number of sugar pine and ponderosa pine in the vicinity of North Calaveras Grove. A secondary purpose was to inspect the lands being purchased in the acquisition of the South Grove for evidence of any unusual amount of forest insect activity.

Insect and Host Species

1. Bark beetles.

The October 1953 survey disclosed that a number of species of bark beetles, indigenous to mixed conifer forests of California, were responsible for the damage occurring among pines surrounding the North Grove. The principal bark beetles involved were the mountain pine beetle (D. monticolae Hopk.) in sugar pine and the western pine beetle (Dendroctonus brevicomis Lec.) in ponderosa pine. Associated with the attacks of these two species were the red turpentine beetle (D. valens Lec.) and pine engravers (Ips spp.). A number of lesser pests were also noted, as previously reported. 1/

Observations made during the present survey confirmed earlier findings concerning the kinds of bark beetles involved. The mountain pine beetle and western pine beetle continue to be the chief offenders in the North Grove area. They are present also, as one would expect, in the vicinity of the South Grove. However, the beetles do not appear to be unusually numerous in the latter area.

At the time of this survey, most of the bark beetle broods in the untreated trees that were examined were well developed and approaching maturity. Large larvae and pupae predominated among the life stages present, and in some cases new adults were found.

1/ C. B. Eaton, Forest Insect Conditions, Calaveras Big Trees State Park, October 1953. Reconnaissance Survey. Forest Insect Laboratory, October 14, 1953.

2. Other insects

The work of a number of forest pests, other than bark beetles, was observed in the Park during the course of the survey. Two are believed to be potentially of some importance as forest defoliators, and are noted here as a matter of record rather than because of their present importance. They are tentatively identified as follows:

Insect	Host
White-fir sawfly (*Neodiprion* sp.)	White fir
Silver-spotted halisidota (*Halisidota argentata* Pack.)	White fir Incense-cedar Sugar pine

The white-fir sawfly was found on understory white fir in the South Grove area, where newly hatched (first instar) and second-instar larvae were feeding on the last year's needles. The work of the silver-spotted halisidota was observed frequently throughout the Park and in adjacent forested areas. For the most part, defoliation attributed to the caterpillars of this insect was confined to the top two or three feet of immature trees or to the terminal portions of top laterals. The larvae had completed their feeding and most seemed to have migrated to sheltered locations to pupate. Collections of a number of caterpillars were obtained for rearing in Berkeley.

tatus and Scope of Bark-Beetle Infestation

From the standpoint of number of trees infested, and taking into account those that were felled and treated during the winter, there has been no increase in bark-beetle damage in the vicinity of the North Grove. Only one additional ponderosa pine not previously detected was found to be infested in the present survey. However, in all of the sugar pine trees that were top-killed last fall, further browning of the foliage and deterioration of the crown has taken place. This is characteristic of an active and progressive mountain pine beetle infestation in old-growth sugar pine, and there is little chance that the trees so affected will survive. It is probable that the mid-boles of these trees were infested at the time of the 1953 survey, but because of the height of the trees this fact could not be ascertained earlier. The only recourse is to fell and treat these infested trees to destroy the broods present, as a measure of protection to those that have not yet been attacked.

In the South Grove, and in lands adjacent to but outside the Park, bark-beetle damage appears to be at a very low level. One large sugar pine, one sugar pine pole, and one large ponderosa pine were the only trees observed to be currently infested in the South Grove area. From the number of older bark-beetle-killed trees seen, it is evident that losses in these stands have been more or less normal for a number of years.

Discussion

The mountain pine beetle in old-growth sugar pine in the vicinity of the North Grove continues to be the principal bark-beetle problem in the Park. Control work during the winter has reduced the number of infested trees and, with the exception noted above, there has been no increase this spring. As previously stated, the trees that were top-killed last fall, and which now show signs of progressive killing, are a hazard to the remainder of the stand and should be felled and treated to prevent further losses. The broods examined in two trees that were recently felled were found to be well advanced in development, and heavy populations were present. It may be expected that the remaining standing infested trees are in a similar condition. For this reason, it is important to carry out the necessary control work as rapidly as possible, before the adults mature and emerge to attack new trees.

In the control work that has recently been done, penetrating oils, consisting of orthodichlorobenzene in fuel oil, have been applied to the bark surface of the trees after felling. As a means of destroying the brood, this method was observed to have been very effective in the trees that were examined. All stages of the insect were either dead or moribund from the effects of the chemical. Considering the size of the trees involved, the thickness of the bark, and the mechanical problems to be encountered in rolling the sections so as to be able to treat all sides, some failures in the use of penetrating oils would not have been surprising. In the control work that has been completed thus far, it is evident that considerable care has been exercised in applying the control technique to insure that all of the infested bark surface was treated.

Berkeley, California
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